

09/461756

ABSTRACT OF THE DISCLOSURE

A light-receiving device of a pin junction structure, constituted by a quantum-wave interference layers Q_1 to Q_4 with plural periods of a pair of a first layer W and a second layer B and carrier accumulation layers C_1 to C_3 . The second layer B has wider band gap than the first layer W. Each thicknesses of the first layer W and the second layer B is determined by multiplying by an even number one fourth of wavelength of quantum-wave of carriers in each of the first layer W and the second layer B existing at the level near the lowest energy level of the second layer B. A δ layer, for sharply varying energy band, is formed at an every interface between the first layer W and the second layer B and has a thickness substantially thinner than the first layer W and the second layer B. As a result, when electrons are excited in the carrier accumulation layers C_1 to C_3 , electrons are propagated through the quantum-wave interference layer from the n-layer to the p-layer as a wave, and electric current flows rapidly.